

Notice of Allowability

Application No.

09/805,606

Examiner

Samuel Broda

Applicant(s)

DAVIS ET AL.

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicants' Amendment mailed on 4 March 2005.
2. ☒ The allowed claim(s) is/are 1-50.
3. ☒ The drawings filed on 4 March 2005 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____



**SAMUEL BRODA, ESQ.
PRIMARY EXAMINER**

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1. This communication is in response to Applicants' Amendment Under 37 C.F.R. §1.116 (the "Amendment") mailed on 4 March 2005. In the Amendment, claims 1-2, 27-28, 35, 39, and 45 were amended; claims 1-50 are pending.

Examiner's Amendment

2.1 An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The first Examiner's amendment corrects a typographical error in appearing in the claim status of claim 27.

The second Examiner's amendment corrects a set of typographical errors appearing in claims 46-50; in claim 46, this claim was dependent upon itself. Authorization for this Examiner's amendment was given in a 24 March 2005 telephone conversation with Mr. Joseph Walkowski, Reg. No. 28,765.

2.2 The application has been amended as follows:

In Claim 27, line 1, change the claim status from:

"Previously Presented"

to:

--Currently Amended--.

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2.3 The application has been amended as follows:

In Claim 46, line 1, change:

“The method as recited in claim 46”

to:

--The method as recited in claim 45--.

In Claim 47, line 1, change:

“The method as recited in claim 46”

to:

--The method as recited in claim 45--.

In Claim 48, line 1, change:

“The method as recited in claim 46”

to:

--The method as recited in claim 45--.

In Claim 49, line 1, change:

“The method as recited in claim 46”

to:

--The method as recited in claim 45--.

In Claim 50, line 1, change:

“The method as recited in claim 46”

to:

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--The method as recited in claim 45--.

Reasons for Allowance

3. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a simulation method for random packing of spherical particles of multiple sizes by performing separate kinematics and dynamics simulations (Fu et al, "Particle Packing by Kinematics and Dynamics Simulations");

(2) a method of packing a set of unequal spheres in a polytope such that: (1) the packed spheres do not overlap, and (2) the sum of the volumes of the packed spheres is maximized (Sutou et al, "A Study of the Global Optimaization [sic] Approach to Spherical Packing Problems"); and

(3) a method of random particle packing using a dimension reducing strategy and central string packing (Davis et al, "Random Particle Packing by Reduced Dimension Algorithms").

3.1 Applicants' first set of claims consists of claims 1 and 38.

Independent claim 1 is directed to a machine-implemented method for simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitations of:

"defining a catch net representative of buoyancy of a portion of a plurality of placed particles and

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positioning the catch net within the space based upon the placement of the portion of the plurality of placed particles” and “simulating placement of the selected particle within a corresponding subspace so that the selected particle is positioned in a non-overlapping relationship with respect to the plurality of placed particles, the catch net, and the water level.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a catch net, claims 1 and 38 are deemed allowable.

3.2 Applicants’ second set of claims consists of claims 2-25.

Independent claim 2 is directed to a machine-implemented method for simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitations of: “defining a catch net representative of buoyancy of a portion of a plurality of placed particles and positioning the catch net within the space based upon the placement of the portion of the plurality of placed particles” and “simulating placement of the selected particle within a corresponding subspace so that the selected particle is positioned in a non-overlapping relationship with respect to the plurality of placed particles and the catch net.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a catch net, claims 2-25 are deemed allowable.

3.3 Applicants’ third set of claims consists of claim 26.

Independent claim 26 is directed to an apparatus for simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitations of: “defining a catch net representative of buoyancy of a portion of a plurality of placed particles and positioning the

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catch net within the space based upon the placement of the portion of the plurality of placed particles” and “simulating placement of the selected particle within a corresponding subspace so that the selected particle is positioned in a non-overlapping relationship with respect to the plurality of placed particles and the catch net.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a catch net, claim 26 is deemed allowable.

3.4 Applicants’ fourth set of claims consists of claim 27.

Independent claim 27 is directed to a machine-readable for use in simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitation of: “defining a catch net representative of buoyancy of a portion of a plurality of placed particles and positioning the catch net within the space based upon the placement of the portion of the plurality of placed particles, the selected particle being placed in non-overlapping relationship with respect to the catch net.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a catch net, claim 27 is deemed allowable.

3.5 Applicants’ fifth set of claims consists of claims 28-34.

Independent claim 28 is directed to a machine-implemented method for simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitations of: “defining a water level representative of a level of a portion of a plurality of placed particles that are smaller than the selected particle” and “simulating placement of the selected particle within a

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corresponding subspace so that the selected particle is positioned in a non-overlapping relationship with respect to the plurality of placed particles and the water level.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a water level, claims 28-34 are deemed allowable.

3.6 Applicants’ sixth set of claims consists of claim 36.

Independent claim 36 is directed to an apparatus for simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitation of: “establishing a water level representative of a level of a portion of the placed particles that are smaller than the selected particle and represent a surface of the smaller placed particles, and for positioning the water level within the space based upon the smaller particle surface, the selected particle being placed in non-overlapping relation with respect to the water level.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a water level, claim 36 is deemed allowable.

3.7 Applicants’ seventh set of claims consists of claim 37.

Independent claim 37 is directed to a machine-readable medium for simulating the placement of a plurality of unplaced particles. This claim identifies the distinct limitation of: “defining a water level representative of a level of a portion of the placed particles that are smaller than the selected particle and represent a surface of the smaller placed particles, and for positioning the water level within the space based upon the smaller particle surface, the selected particle being placed in non-overlapping relation with respect to the water level.”

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Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a water level, claim 37 is deemed allowable.

3.8 Applicants' eighth set of claims consists of claims 39-44.

Independent claim 44 is directed to a machine-implemented method for simulating the placement of a particle. This claim identifies the distinct limitations of: “defining a water level representative of a level of a portion of the placed particles that are smaller than the selected particle” and “simulating contact of the particle with at least one of the cylindrical wall of the space, the water level, the cylindrical wall of one of the plurality of subspaces, and at least one of the plurality of previously placed particles.”

Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a water level, claims 39-44 are deemed allowable.

3.9 Applicants' ninth set of claims consists of claims 45-50.

Independent claim 45 is directed to a machine-implemented method for simulating the placement of a particle. This claim identifies the distinct limitations of: “defining a catch net representative of a buoyancy of a portion of the plurality of previously placed particles and positioning the catch net within the space based upon the placement of the portion of the plurality of previously placed particles” and “simulating contact of the particle with at least one of the cylindrical wall of the space, the catch net, the cylindrical wall of one of the plurality of subspaces, and at least one of the plurality of previously placed particles.”

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Because the closest prior art does not appear to teach or suggest simulating placement of a plurality of unplaced particles using a catch net, claims 45-50 are deemed allowable.

4. Any comments considered necessary by Applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (571) 272-3709. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska can be reached at (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (571) 272-2100.


SAMUEL BRODA, ESQ.
PRIMARY EXAMINER